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# FUSRAP CLEANUP CRITERIA

## Technical and Legal Aspects

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# FUSRAP and the CERCLA Process

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## CERCLA Nine Criteria for Remedy Selection

- Threshold: ARARs and protectiveness affect cleanup levels development the most
- Balancing: Cost, Reduction Through Treatment, Effectiveness Long & Short Term, Implementability
- Modifying: State & Community Acceptance

# Threshold Criteria: ARARS/Risk

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**ARARs establish fundamental level of protectiveness.**

**Risk is used in the absence of ARARs, or if ARARs aren't protective due to multiple contaminants or pathways.**

- NCP Section 300.430(e)(2)(i)(A)(2)

# ARARs/Risk

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## Some ARARs Have Risk Components

- Requirements of NRC License Termination (10 CFR 20)
- Based on TEDE (mrem/yr) and ALARA

# CERCLA Risk Assessment

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## Human Health and Ecological

- Site data, exposures for current & potential use, toxicity

## Results used to determine further action

- FS for sites where $10^{-4}$ excess cancer risk or HI ~1 exceeded
- Corps Policy for Risk Assessment: Use “good science”, document assumptions & uncertainties

# Preliminary Remedial Goals (PRGs)

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- **Developed for Contaminants of Concern using information from risk assessment**
- ***Screening levels*** **used early in SI/RI; modified to PRGs after risk assessment complete**

# PRG Modification

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## Technical factors considered

- Background
- Values distinguishable from background
- Detection Limits
- Limitations of remedies

# ROD Documentation

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**In terms of protectiveness, concentrations taken away are not as important as concentrations that are left behind.**

# What Are ARARs?

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- **CERCLA 121, “Degree of Cleanup”**
- **Hazardous substances will remain on site**
- **Federal Environmental and State Environmental or Facility Siting Laws and Promulgated Regulations Establish Standards, Requirements, Criteria or Limitations**
- **Applicable to Site, or Relevant and Appropriate to Circumstances of Release**

# Significance of ARARs

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- **Applicable - Could be Enforced Independently**
- **Relevant and Appropriate - NOT Independently Enforceable**
- **CERCLA Enforcement Possible If Established as ARAR in ROD**
- **RA Not Complete Until ARARs Satisfied**

# ARARs for Radionuclides

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- UMTRCA General Standards for Inactive U Mills, 40 CFR 192
- NRC Conforming Regulations for Active Mills, 10 CFR Part 40, Appendix A
- NRC Decommissioning Standards for Other Sites with Radionuclide Contamination, 10 CFR Part 20, Subpart E

# UMTRCA Standards

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- A - Control Areas, Radon-222 Release Rate Not More Than 20 pCi/L/m2 for 200 to 1000 years
- A- Groundwater Limits for Specified Constituents from Control Areas
- B - Land, Radium-226 Not More Than 5 pCi/g Above Background Averaged over 100 m2 for First 15 cm Below Surface

# More UMTRCA Standards

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- B - Land, Radium-226 Not More Than 15 pCi/g Above Background Averaged over 100 m2 for Each Lower 15 cm Layer Below First 15 cm
- B - Buildings, Radon Decay Goal of 0.02 WL, But Not More Than 0.03 WL, and Gamma Radiation Not To Exceed 20 microR/hour

# More UMTRCA Standards

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- **C - Supplemental Standards If Remediation High Risk, or Low Benefit, or for Vicinity Properties if Cost Excessive (Inaccessible Areas)**
  - For Soils and Buildings Establish ALARA as Close to Standard as Reasonably Achievable
  - For Groundwater Meet NCP Risk Range

# More UMTRCA Standards

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- D - Management of Residual Byproduct Materials By Barriers to Limit Releases of Radon-222 to 20 pCi/m2/second
- E - Thorium Byproduct Material, Same Standards As Uranium With Some Exceptions
- NRC 10 CFR 40, App. A Conforms and Provides Design Details for Barriers

# NRC Radiological Criteria, 10 CFR Part 20, Subpart E

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- **Unrestricted Use - TEDE No More Than 25 mrem/yr Above Background From All Pathways Plus ALARA**
- **Restricted Use - Institutional Controls Will Provide Protection To TEDE of 25 mrem/yr Above Background, Residual Levels Are ALARA And If Institutional Controls Fail Then TEDE Not More Than 100 mrem/yr Above Background**

# More NRC Radiological Criteria

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- **Alternate Concentration Limit (ACL) if Cost Prohibitive or Harm Outweighs Benefit, Durable Institutional Controls Plus Residual TEDE Levels Not Greater Than 500 mrem/yr If Controls Fail**
- **For All Sites - Develop a Site Specific "Derived Concentration Guideline" (DCGL) (Using NRC Approved Models)**

# Groundwater ARARs

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- **SDWA MCLs If Actual or Potential Drinking Water Source**
  - See State and EPA Classifications - Don’t Assume All Drinking Water Sources
  - Proposed Standards Are Pending Finalization
- **UMTRCA Groundwater Standards For Control Areas or Disposal Areas on Site**
- **NRC All Pathways TEDE Analysis**

# "To Be Considered" Criteria

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- **Not Promulgated Regulations**
- **Discretionary to Lead Agency If Useful**
- **Scientifically Reliable Standards**
- **<u>Only</u> If No ARARS <u>and</u> Helpful To Decision Maker**
  - For example, Guidelines Commonly Used That Avoid Need For Risk Based Calculations for Secondary Contaminants of Concern

# Selecting ARARs

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- Radionuclide (or Other Chemical) Characterization
- Historic Site Activities (Review Actual Historic Records, Not Just RI Summary)
- Media to be Remediated
- Circumstances of Release
- Purpose of the Potential ARAR
- Focus On Defining Completion